

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re Application of: Toni KOPRA <i>et al.</i>	Confirmation No.: 9401
Application No.: 10/810,924	Group Art Unit: 2617
Filed: March 26, 2004	Examiner: Matthew C Sams

For: FEATURE EXTRACTION IN A NETWORKED PORTABLE DEVICE

Commissioner for Patents
Alexandria, VA 22313-1450

APPEAL BRIEF

Dear Sir:

This Appeal Brief is submitted in support of the Notice of Appeal dated October 20, 2009.

I. REAL PARTY IN INTEREST

The real party in interest is Nokia Corporation, a corporation organized under the laws of Finland and having a place of business at Keilalahdentie 4, FIN-02150 Espoo, Finland. The above referenced patent application is assigned to Nokia Corporation..

II. RELATED APPEALS AND INTERFERENCES

Appellants are unaware of any related appeals and interferences.

III. STATUS OF THE CLAIMS

Claims 1-9, 12, 16-20, 22-27, 30, 35, 37, 38, 40, and 47-70 are pending in this appeal, in which claims 10, 11, 13-15, 21, 28, 29, 31-34, 36, 39, and 41-46 have earlier been canceled and claims 37, 38, 40, 47, and 56-70 have been allowed. Therefore, claims 37, 38, 40, 47, and 56-70 are not being appealed. This appeal is therefore taken from the final rejection of claims 1-9, 12, 16-20, 22-27, 30, 35, and 48-55 on July 21, 2009.

IV. STATUS OF AMENDMENTS

All amendments have been entered.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

The claimed invention addresses problems associated with digital media file recognition and mobile appliances. As an example, in one embodiment, a mobile station receives a media sample, such as a bit of music, and extracts at least one feature of that media sample, transmitting the extracted feature over a wireless link for identification of the digital media file.

Independent claim 1 reads as follows:

1. An apparatus comprising:

an interface configured to receive a media sample (See, e.g., Specification, ¶¶ [0009] , [0019], [0020], [00051]; Fig. 1, mobile terminal 26; Fig. 3A);

a processor configured to extract a first set of lower level but not higher level features from a digital version of the media sample (See, e.g., Specification, ¶¶ [00009] , [00019], [00020], [00051]; Fig. 1, mobile terminal 26; Fig. 3A);

a transmitter configured to transmit the extracted first set of lower level but not higher level features over a wireless communication link (See, e.g., Specification, ¶¶ [00009], [00020], [00050]-[00054]; Figs 3A, 3B),

a receiver configured to receive over the wireless communication link a request message that requests at least one additional feature (See, e.g., Specification, ¶¶ [00009], [00021]-[00025]; Fig. 1, recognition service 34);

wherein the processor is further configured to respond to the request message to extract a second set of lower level but not higher level features from the digital version of the media sample and to transmit the extracted second set of lower level but not higher level features over the wireless communication link to a remote service for any necessary higher level feature extraction for matching in conjunction with the first and second sets of lower level features, wherein the receiver is configured to receive notification as to identification of a media corresponding to the media sample from the remote service (See, e.g., Specification, ¶¶ [00050], [00053]; Figs. 2B, 3B).

Independent claim 23 reads as follows:

23. A computer readable storage medium embodied with a computer program comprising:
a first set of computer instructions to extract in response to a user input on a device a first set of lower level but not higher level features from a digital media sample, and to extract in response to a received request message to the device from a remote service, through wireless communications, a second set of lower level but not higher level features consistent with at least one additional feature requested in the request message (See, e.g., Specification, ¶¶ [00012], [00050]-[00054]; Figs 3A, 3B);

a second set of computer instructions to transmit in separate messages the first and second sets of extracted lower level but not higher level features over a wireless communications link to a remote service for any necessary higher level feature extraction for matching in conjunction with the first and second sets of lower level features (See, e.g., Specification, ¶¶ [00012], [00050]-[00054]; Figs 3A, 3B); and

a third set of computer instructions for receiving a notification of identification of a media corresponding to the media sample from the remote service (See, e.g., Specification, ¶¶ [00012], [00050]-[00054]; Figs 3A, 3B).

Independent claim 48 reads as follows:

48. An apparatus comprising:

means for receiving a media sample (See, e.g., Specification, ¶¶ [0009] , [0019], [0020], [00051]; Fig. 1, mobile terminal 26; Fig. 3A);

processing means for extracting at least one feature from a digital version of the media sample, said processing means responsive to a user input to extract a first set of lower level but not higher level features and responsive to a request message identifying at least one additional feature to extract a second set of lower level but not higher level features consistent with the identified at least one additional feature (See, e.g., Specification, ¶¶ [00009] , [00019], [00020], [00051]-[00054]; Fig. 1, mobile terminal 26; Fig. 3A);

means for transmitting the first and second sets of lower level but not higher level features in separate messages over a wireless communication link to a remote service for any necessary higher level feature extraction for matching in conjunction with the first and

second sets of lower level features (See, e.g., Specification, ¶¶ [00009], [00020]; [00050]-[00054]; Figs. 3A, 3B); and

means for receiving the request message through wireless communications and for receiving notification of an identification of a media corresponding to the media sample from the remote service (See, e.g., Specification, ¶¶ [00009], [00021]-[00025]; [00050]-[00054]; Fig. 1, recognition service 34; Figs. 3A, 3B).

Independent claim 50 reads as follows:

50. A method comprising:

at a portable wireless device, receiving a media sample (See, e.g., Specification, ¶¶ [0009] , [0019], [0020], [00051]; Fig. 1, mobile terminal 26; Fig. 3A);

at the portable wireless device, extracting a first plurality of lower level but not higher level features from a digital version of the media sample (See, e.g., Specification, ¶¶ [00009] , [00019], [00020], [00051]; Fig. 1, mobile terminal 26; Fig. 3A);

transmitting from the portable wireless to a remote service device a message that includes the extracted first plurality of lower level but not higher level features (See, e.g., Specification, ¶¶ [00009], [00020], [00050]-[00054]; Figs 3A, 3B);

receiving at the portable wireless device a request message requesting at least one additional lower level but not higher level feature (See, e.g., Specification, ¶¶ [00009], [00021]-[00025]; Fig. 1, recognition service 34);

at the portable wireless device, extracting at least one extra lower level but not higher level feature consistent with the request message (See, e.g., Specification, ¶¶ [00050], [00053]; Figs. 2B, 3B);

transmitting from the portable wireless device a message that includes the extracted extra lower level but not higher level feature to the remote service for any necessary higher level feature extraction for matching in conjunction with the first and second sets of lower level features (See, e.g., Specification, ¶¶ [00009], [00020], [00050]-[00054]; Figs 3A, 3B); and

receiving a notification of identification from the remote service (See, e.g., Specification, ¶¶ [00050]-[00054]; Figs 3A, 3B, steps 320, 336, 338).

VI. GROUND S OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1-9, 12, 16, 17, 22-27, 30, 35, and 48-55 were rejected under 35 U.S.C. §103(a) for obviousness based on *Wang et al.* (US 6,990,453) in view of *Rhoads et al.* (US 7,185,201).

Claims 18-20 were rejected under 35 U.S.C. §103(a) for obviousness based on *Wang et al.* (US 6,990,453) and *Rhoads et al.* (US 7,185,201) in view of *Vetro et al.* (US 6,490,320).

VII. ARGUMENT

A. CLAIMS 1-9, 12, 16, 17, 22-27, 30, 35, AND 48-55 ARE NOT RENDERED OBVIOUS BY *WANG ET AL.* AND *RHOADS ET AL.* BECAUSE NEITHER REFERENCE DISCLOSES THE CLAIMED EXTRACTION OF A LOWER LEVEL, BUT NOT HIGHER LEVEL, FEATURES FROM A DIGITAL SAMPLE, THE CLAIMED REQUEST MESSAGE, OR THE CLAIMED REMOTE SERVICE.

The initial burden of establishing a *prima facie* basis to deny patentability to a claimed invention under any statutory provision always rests upon the Examiner. *In re Mayne*, 104 F.3d 1339, 41 USPQ2d 1451 (Fed. Cir. 1997); *In re Deuel*, 51 F.3d 1552, 34 USPQ2d 1210 (Fed. Cir. 1995); *In re Bell*, 991 F.2d 781, 26 USPQ2d 1529 (Fed. Cir. 1993); *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In rejecting a claim under 35 U.S.C. § 103, the Examiner is

required to provide a factual basis to support the obviousness conclusion. *In re Warner*, 379 F.2d 1011, 154 USPQ 173 (CCPA 1967); *In re Lunsford*, 357 F.2d 385, 148 USPQ 721 (CCPA 1966); *In re Freed*, 425 F.2d 785, 165 USPQ 570 (CCPA 1970).

The Patent Office must give specific reasons why one of ordinary skill in the art would have been motivated to combine the references. See, e.g., *In re Kotzab*, 217 F.3d 1365, 1371, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000); *In re Rouffet*, 149 F.3d 1350, 1359, 47 USPQ2d 1453, 1459 (Fed. Cir. 1998).

The claimed invention, as represented by independent claims 1, 23, and 50 is directed to an apparatus and a remote service, wherein the apparatus is configured to perform lower level, but not higher level, feature extraction and the remote service is configured to perform any necessary higher level feature extraction from extracted lower level features transmitted by the apparatus to identify the media from which the lower level features have been extracted.

Independent claim 1, for example, recites:

An apparatus comprising:

an interface configured to receive a media sample;

a processor **configured to extract a first set of lower level but not higher level features from a digital version of the media sample;**

a transmitter configured to transmit the extracted first set of lower level but not higher level features over a wireless communication link,

a receiver configured to receive over the wireless communication link a request message that requests at least one additional feature;

wherein the processor is further configured to respond to the request message to extract a second set of lower level but not higher level features from the digital version of the media sample and to transmit the extracted second set of lower level but not higher level features over the wireless communication link to a remote service for any necessary higher level feature extraction for matching in conjunction with the first and second sets of lower level features, wherein the receiver is configured to receive notification as to identification of a media corresponding to the media sample from the remote service.

Wang et al. uses landmarks and fingerprints to construct a database 18 (see the abstract, for example). A media sample is captured at step 12 in Fig. 1. Landmarks and fingerprints from the sample are computed at 14 and the result is used to retrieve matching fingerprints at 16 by comparing with entries in database 18. Correspondences are generated at 20 and the successful media file is identified at 22.

There is disclosed in *Wang et al.* a continuously sampled sound source, wherein sound parameters may be extracted from a sound buffer into fingerprints or other intermediate feature-extracted forms and stored in a second buffer. New fingerprints may be added to the front of the second buffer while old fingerprints are discarded from the end of the second buffer to form a rolling buffer (See col. 21, lines 64-67, and col. 22, lines 19-24).

In *Wang et al.*, a search is first performed on a first subset of sound files and then, only if this search fails, is a search of a second subset of sound files performed. (col. 19, lines 23-24). *Wang et al.* does not request the mobile station to provide a second set of features and the skilled artisan would not have been led to modify *Wang et al.* to provide such request since *Wang et al.* is directed to a first search of highly used sound files only to be followed by a second search of less highly used sound files. *Wang et al.* does not contemplate, and the skilled artisan would not seek to modify *Wang et al.* to provide for, a request for a second set of features because, as is clear from Fig. 1 of the reference, *Wang et al.* searches for matching fingerprints at 16 and then generates correspondence at 20, with the help of sample landmarks, to find a winning sound file at 22. Thus, there would be no need for a request for a second set of features in *Wang et al.* and, in fact, a modification of *Wang et al.* to provide for such a request would render *Wang et al.* unsatisfactory for its intended purpose of recognizing an audio sample. If a proposed modification would render the prior art being modified unsatisfactory for its intended purpose,

then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).

Moreover, *Wang et al.* does not teach an apparatus configured to extract lower level features that may be later used by a separate remote device to extract higher level features off-apparatus to identify a media from a media sample, and does not teach a remote service configured to identify from received lower level features and configured to extract higher level features from the received lower level features to uniquely identify a media corresponding to the media sample, as claimed.

As disclosed by *Wang et al.* at col. 8, lines 13-24,

The client end sends a feature-extracted summary of the captured signal sample containing landmark and fingerprint pairs to the server end, which performs the recognition. Sending this feature-extracted summary to the server, instead of the raw captured signal, is advantageous because the amount of data is greatly reduced, often by a factor of 500 or more. Such information can be sent in real time over a low-bandwidth side channel along with or instead of, e.g., an audio stream transmitted to the server. This enables performing the invention over public communications networks, which offer relatively small-sized bandwidths to each user.

Thus, in accordance with the disclosure of *Wang et al.*, the feature extraction occurs at the client device while the recognition occurs at the server. There is no separate higher feature extraction at a remote service separate from the processor that extracts the lower level features, as claimed. Thus, *Wang et al.* does not disclose or suggest “wherein the processor is further configured to respond to the request message to extract a second set of lower level but not higher level features from the digital version of the media sample and to transmit the extracted second set of lower level but not higher level features over the wireless communication link to a remote service for any necessary higher level feature extraction for matching in conjunction with the first and second sets of lower level features, wherein the receiver is configured to receive notification

as to identification of a media corresponding to the media sample from the remote service,” as in claim 1, “a first set of computer instructions to extract in response to a user input on a device a first set of lower level but not higher level features from a digital media sample, and to extract in response to a received request message to the device from a remote service, through wireless communications, a second set of lower level but not higher level features consistent with at least one additional feature requested in the request message,” as in claim 23, “means for transmitting the first and second sets of lower level but not higher level features in separate messages over a wireless communication link to a remote service for any necessary higher level feature extraction for matching in conjunction with the first and second sets of lower level features,” as in claim 48, or “transmitting from the portable wireless device a message that includes the extracted extra lower level but not higher level feature to the remote service for any necessary higher level feature extraction for matching in conjunction with the first and second sets of lower level features; and receiving a notification of identification from the remote service,” as in claim 50.

In recognition of the deficiencies of *Wang et al.*, the Examiner relied on *Rhoads et al.* for its teaching of a system that identifies audio samples, including the ability to extract multiple fingerprints from a file in order to resolve ambiguity, and the ability to combine multiple fingerprints into a higher level fingerprint. The Examiner’s stated rationale, at page 4 of the Final Action, for making the combination, i.e., modifying *Wang et al.* with the teachings of *Rhoads et al.*, is that the skilled artisan would have been led to modify *Wang et al.* “to incorporate the ability to increase resolution to resolve ambiguity” because “it enables back and forth communication to resolve ambiguity and to ensure a matching file.”

The cited portion of *Rhoads et al.*, col. 3, lines 1-25, recites

Some fingerprinting techniques do not rely on the absolute audio data (or transformed data) per se, but rather rely on the changes in such data from sample

to sample (or coefficient to coefficient) as an identifying hallmark of the audio.

Some fingerprinting algorithms consider the entire audio track (e.g., 3 minutes). Others work on much shorter windows--a few seconds, or fractions of seconds. The former technique yields a single fingerprint for the track. The latter yields plural fingerprints--one from each excerpt. (The latter fingerprints can be concatenated, or otherwise combined, to yield a master fingerprint for the entire audio track.) For compressed audio, one convenient unit from which excerpts can be formed is the frame or window used in the compression algorithm (e.g., the excerpt can be one frame, five frames, etc.).

One advantage to the excerpt-based techniques is that a song can be correctly identified even if it is truncated. Moreover, the technique is well suited for use with streaming media (in which the entire song data is typically not available all at once as a single file).

In database look-up systems employing fingerprints from short excerpts, a first fingerprint may be found to match 10 songs. To resolve this ambiguity, subsequent excerpt-fingerprints can be checked.

While “subsequent excerpt-fingerprints can be checked” in *Rhoads et al.* if there is an ambiguity in determining a song from a first fingerprint, there is no indication that such “subsequent excerpt-fingerprints” consist of “higher level feature extraction,” let alone that the subsequent excerpt-fingerprints result in a higher level feature extraction at a remote server, separate from the processor that performs the lower level extraction. The concatenation disclosed by *Rhoads et al.* does not correspond to the claimed extractions, especially to extracting “a first set of lower level but not higher level features from a digital version of the media sample,” as claimed.

Also, in the cited portion, *Rhoads et al.* discloses a database look-up system and the checking of “subsequent excerpt-fingerprints” to resolve ambiguities, but nowhere does *Rhoads et al.* disclose “a request message that requests at least one additional feature,” as claimed. Because there is no request message, *Rhoads et al.* cannot, of course, disclose responding to such a request message, as claimed.

Further, since the database look-up system of *Rhoads et al.* is not disclosed as, or suggested to be, a “remote server,” the reference does not suggest “a remote service for any necessary higher level feature extraction for matching in conjunction with the first and second sets of lower level features,” as claimed.

Thus, *Rhoads et al.* does not provide for the deficiencies of *Wang et al.* Accordingly, since neither reference discloses extracting “**a first set of lower level but not higher level features from a digital version of the media sample,**” receiving “**a request message that requests at least one additional feature,**” or “**a remote service for any necessary higher level feature extraction for matching in conjunction with the first and second sets of lower level features,**” no combination of these references would result in the instant claimed subject matter, within the meaning of 35 U.S.C. §103(a).

At page 2 of the Advisory Action of October 14, 2009, the Examiner asserts that one cannot show nonobviousness by arguing against the references individually. While Appellants certainly agree with this tenet of patent law, Appellants have not argued the references individually. Rather, Appellants have pointed out that neither reference discloses certain claim features, such as extracting “**a first set of lower level but not higher level features from a digital version of the media sample,**” receiving “**a request message that requests at least one additional feature,**” or “**a remote service for any necessary higher level feature extraction for matching in conjunction with the first and second sets of lower level features.**” Since neither reference discloses or suggests these claim features, it follows that no combination of the references can suggest the missing claim features. Contrary to the Examiner’s position, this is an argument against the **combination** of references.

At page 2 of the Advisory Action, the Examiner argues that since *Wang et al.* teaches, at col. 19, lines 23-24, the ability to perform a second search when a result is not found, this is enough reason to bring in *Rhoads et al.* for a teaching of identifying audio samples with the ability to extract multiple fingerprints from a file in order to resolve ambiguity, with the additional ability to combine multiple fingerprints into a higher level fingerprint. Appellants disagree.

In *Wang et al.*, the second search is performed **only** if the first search fails. *Wang et al.* does not request the mobile station to provide a second set of features and the skilled artisan would not have been led to modify *Wang et al.* to provide such request since *Wang et al.* is directed to a first search of highly used sound files **only to be followed by a second search of less highly used sound files**. *Wang et al.* does not contemplate a request for a second set of features because *Wang et al.* searches for matching fingerprints at 16 and then generates correspondence at 20, with the help of sample landmarks, to find a winning sound file at 22. There would be no need for a request for a second set of features in *Wang et al.* and any modification of *Wang et al.* to provide for such a request would render *Wang et al.* unsatisfactory for its intended purpose of recognizing a received audio sample.

In any event, a disclosed ability to perform a second search when a first search fails would not have led a skilled artisan to modify this teaching of *Wang et al.* by identifying audio samples with the ability to extract multiple fingerprints from a file in order to resolve ambiguity, as in *Rhoads et al.* One has nothing to do with the other. But, more importantly, the mere disclosure, in *Rhoads et al.*, of extracting multiple fingerprints does not suggest the very specific extractions of the instant claimed subject matter, wherein there is an extraction of “**a first set of lower level but not higher level features from a digital version of the media sample,**” and

then, after receiving **“a request message that requests at least one additional feature,”** a remote service is employed **“for any necessary higher level feature extraction for matching in conjunction with the first and second sets of lower level features.”** Neither *Wang et al.* nor *Rhoads et al.* discloses or suggests these claim features.

With regard to the claimed “remote service,” the Examiner indicates at page 3 of the Advisory Action that he gives this claim feature “no patentable weight” when considering the “apparatus” of claims 1 and 48 and the “computer readable storage medium” of claim 23. The Examiner’s position is legally flawed. Every claim feature must be considered in making an obviousness determination under 35 U.S.C. §103(a). It is well settled that **all words in a claim must be considered in deciding the patentability of that claim against the prior art.** *In re Wilson*, 424 F.2d 1382, 165 USPQ 494 (CCPA 1970).

By transmitting “the extracted second set of lower level but not higher level features over the wireless communication link to a remote service for any necessary higher level feature extraction,” as in claim 1, even though the remote service may not be part of the apparatus, it is an absolutely necessary part of the claim in order to show that while the lower level extraction may take place at the processor, the extracted second set of lower level but not higher level features must be sent elsewhere, i.e., to a “remote server,” for higher level extraction. The Examiner cannot legally ignore the “remote server” feature of the instant claims and to do so constitutes legal error on the Examiner’s part. The Examiner’s rejection must be reversed for this reason alone.

The Examiner also indicates, at page 3 of the Advisory Action, a “higher level feature extraction” is not positively recited in the claims and is not required by the claims. Appellants disagree.

Independent claim 1 recites, in part, "...transmit the extracted second set of lower level but not higher level features over the wireless communication link to a remote service **for any necessary higher level feature extraction.**" Independent claim 23 recites, in part, "...transmit in separate messages the first and second sets of extracted lower level but not higher level features over a wireless communications link to a remote service **for any necessary higher level feature extraction.**" Independent claim 48 recites, in part, "transmitting the first and second sets of lower level but not higher level features in separate messages over a wireless communication link to a remote service **for any necessary higher level feature extraction.**" Independent claim 50 recites, in part, "transmitting from the portable wireless device a message that includes the extracted extra lower level but not higher level feature to the remote service **for any necessary higher level feature extraction.**" Thus, while, in some situations, a higher level feature extraction may not be necessary, in those situations where it is necessary, in accordance with the instant claim language, the claimed method, apparatus, etc. must be capable of performing such higher level feature extraction. Thus, contrary to the Examiner's position, "higher level feature extraction" is, indeed, positively recited in the claims and must be reckoned with. It is inappropriate for the Examiner to either ignore this claim feature by contending that it is not "positively recited" or to cavalierly contend that the ability to create a "master fingerprint" in *Rhoads et al.* reads upon the limitation. The "master fingerprint" of *Rhoads et al.* does not suggest a remote service employed "**for any necessary higher level feature extraction for matching in conjunction with the first and second sets of lower level features.**"

Further, at page 3 of the Advisory Action, the Examiner contends that *Rhoads et al.* does disclose the claimed "request message" because there are only two ways to identify a file in *Rhoads et al.*, i.e., by transmitting all the fingerprints from the file at once or on an as needed

basis. Thus, “the Examiner believes it would be **obvious** to one of ordinary skill in the art **to try** both solutions, since there is a finite number of identified, predictable solutions, each solution having a reasonable expectation of success (i.e., the identification of the file), in order to determine which solution resulted in the fastest identifications while using the least amount of bandwidth” (emphasis added).

As the Honorable Board is undoubtedly aware, obviousness is tested by what the combined teachings of prior art references would have suggested to those of ordinary skill in the art, not by whether particular combinations of elements would have been “obvious to try.” *In re Fine*, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Geiger*, 815 F.2d 868, 2 USPQ2d 1276 (Fed. Cir. 1987); *In re Goodwin*, 576 F.2d 375, 198 USPQ 1 (CCPA 1978). Whether a particular combination might be “obvious to try” is not a legitimate test of patentability.

In any event, to whatever extent *Rhoads et al.* suggests alternative methods of identifying a file by either transmitting all fingerprints at once or on an as needed basis, this still does not suggest “**a request message that requests at least one additional feature,**” as claimed, since identifying a file, *per se*, is not a request for at least one additional feature.

Accordingly, Appellants submit that the imposed rejection of claims 1-9, 12, 16, 17, 22-27, 30, 35, and 48-55 as being obvious over the combination of *Wang et al.* and *Rhoads et al.* under 35 U.S.C. §103(a) is not factually or legally viable and, hence, solicit the Honorable Board to reverse the rejection.

B. CLAIMS 18-20 ARE NOT RENDERED OBVIOUS BY *WANG ET AL.*, *RHOADS ET AL.*, AND *VETRO ET AL.* BECAUSE *VETRO ET AL.* FAILS TO PROVIDE FOR THE DEFICIENCIES OF THE OTHER TWO REFERENCES.

Vetro et al., applied for an alleged teaching of extracting MPEG-7 descriptors from the digital version of the media sample, does not provide for the deficiencies of *Wang et al.* and *Rhoads et al.* since it fails to disclose or suggest extracting “a first set of lower level but not higher level features from a digital version of the media sample,” receiving “a request message that requests at least one additional feature,” or “a remote service for any necessary higher level feature extraction for matching in conjunction with the first and second sets of lower level features.”

In fact, the combination of *Vetro et al.* with the other two references is improper because *Vetro et al.* relates to delivery systems that adapt information to available bit rates of a network (See, e.g., col. 1, lines 15-17) and is not analogous to *Wang et al.* and *Rhoads et al.* and the instant invention, directed to transmitting extracted features of a digital media sample and deriving the digital media therefrom.

Therefore, claims 18-20 are patentable separately from the claims from which they depend.

Accordingly, Appellants submit that the imposed rejection of claims 18-20 as being obvious over *Wang et al.* and *Rhoads et al.* in view of *Vetro et al.* under 35 U.S.C. §103(a) is not factually or legally viable and, hence, solicit the Honorable Board to reverse the rejection.

VIII. CONCLUSION AND PRAYER FOR RELIEF

For the foregoing reasons, Appellants request the Honorable Board to reverse each of the Examiner’s rejections.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper,

including extension of time fees, to Deposit Account 504213 and please credit any excess fees to such deposit account.

Respectfully Submitted,

DITTHAVONG MORI & STEINER, P.C.

December 18, 2009
Date

/Phouphanomketh Ditthavong/
Phouphanomketh Ditthavong
Attorney for Applicant(s)
Reg. No. 44658

Errol A. Krass
Attorney for Applicant(s)
Reg. No. 60090

918 Prince Street
Alexandria, VA 22314
Tel. (703) 519-9952
Fax. (703) 519-9958

IX. CLAIMS APPENDIX

1. An apparatus comprising:

an interface configured to receive a media sample;

a processor configured to extract a first set of lower level but not higher level features from a digital version of the media sample;

a transmitter configured to transmit the extracted first set of lower level but not higher level features over a wireless communication link,

a receiver configured to receive over the wireless communication link a request message that requests at least one additional feature;

wherein the processor is further configured to respond to the request message to extract a second set of lower level but not higher level features from the digital version of the media sample and to transmit the extracted second set of lower level but not higher level features over the wireless communication link to a remote service for any necessary higher level feature extraction for matching in conjunction with the first and second sets of lower level features, wherein the receiver is configured to receive notification as to identification of a media corresponding to the media sample from the remote service.

2. The apparatus of claim 1 wherein the interface comprises a transducer.

3. The apparatus of claim 2 wherein the transducer comprises a microphone and the media sample comprises an audio sample.

4. The apparatus of claim 2 wherein the transducer comprises a camera and the media sample comprises a visual sample.

5. The apparatus of claim 1 wherein the interface comprises one of a cable and a wireless link.

6. The apparatus of claim 5 wherein the media sample that the interface receives is the digital version.

7. The apparatus of claim 1 wherein said transmitter is further configured to transmit a message that includes the at least one extracted lower level but not higher level feature and no portion of the digital version of the media sample.

8. The apparatus of claim 1 wherein the processor is further configured to adaptively select a number of lower level but not higher level features to extract based on the digital version of the media sample.

9. The apparatus of claim 1 wherein the processor is further configured to adaptively select at least one type of feature to extract based on the digital version of the media sample, the processor extracts at least one feature of the adaptively selected type, and wherein the transmitter is further configured to transmit an identifier of the selected type of feature.

10-11. (Canceled)

12. The apparatus of claim 1 further comprising a user interface configured to cause the transmitter to transmit the first set of lower level but not higher level features, and a buffer configured to store at least a portion of the digital version of the media sample, wherein the processor extracts at least some of the first set prior to a user input at the said user interface.

13-15. (Canceled)

16. The apparatus of claim 1 further comprising a user interface by which a single user input initiates: the processor to extract the first set of lower level but not higher level features, a wireless communications link to be established between the MS and a communication service, and the extracted first set of lower level but not higher level features to be transmitted over the wireless communications link.

17. The apparatus of claim 16 wherein the single user input further initiates a buffer disposed between the transducer and the processor to begin storing at least a portion of the digital version of the media sample.

18. The apparatus of claim 1 wherein the first and second sets of features comprise MPEG-7 descriptors.

19. The apparatus of claim 1 wherein the first set of lower level but not higher level features is non-reconstructive of the digital version of the media sample.

20. The apparatus of claim 1 wherein the first and second sets of features, in combination, are non-reconstructive of the digital version of the media sample.

21. (Canceled)

22. The apparatus of claim 1, wherein the request message specifically identifies each additional feature at least by type, and the second set of features comprises only features of the said identified type.

23. A computer readable storage medium embodied with a computer program comprising:

a first set of computer instructions to extract in response to a user input on a device a first set of lower level but not higher level features from a digital media sample, and to extract in response to a received request message to the device from a remote service, through wireless communications, a second set of lower level but not higher level features consistent with at least one additional feature requested in the request message;

a second set of computer instructions to transmit in separate messages the first and second sets of extracted lower level but not higher level features over a wireless communications link to a remote service for any necessary higher level feature extraction for matching in conjunction with the first and second sets of lower level features; and

a third set of computer instructions for receiving a notification of identification of a media corresponding to the media sample from the remote service.

24. The computer readable storage medium of claim 23 wherein said separate messages comprise features but no portion of the digital media sample.

25. The computer readable storage medium of claim 23 wherein the request message specifies a number of additional features, and the first set of computer instructions is to adaptively select the second set of features comprising the specified number.

26. The computer readable storage medium of claim 23 wherein the first set of computer instructions is to adaptively select a type of feature to extract based on the request message and to extract the first set of features of the adaptively selected type.

27. The computer readable storage medium of claim 23 wherein

the first set of computer instructions is to extract the first set of features from a first time-bounded segment of the digital media sample, and
the second set of computer instructions is to transmit a second time-bounded segment and not the first time-bounded segment with the first set of features.

28-29. (Canceled)

30. The computer readable storage medium of claim 23 wherein the at least one feature defines a timepoint, the first set of computer instructions is to extract at least one timepoint from the digital media sample, and one of said messages comprises a timepoint, a spectral slice of the digital media sample and an identifier that links the spectral slice to the timepoint.

31-34. (Canceled)

35. The computer readable storage medium of claim 23 wherein the first set of features is non-reconstructive of that digital media sample.

36. (Canceled)

37. A computer readable storage medium embodied with a computer program comprising:
a first set of computer instructions to receive over a network to a remote service from a device through wireless communications a first message that includes a first set of received lower level but not higher level features;
a second set of computer instructions to search a database of feature sets for all matching sets that match the first set of received features and to determine at least one additional feature that distinguishes among each of the matching sets;

- a third set of computer instructions to transmit over the network a request message that stipulates the at least one additional feature, the first set of computer instructions further to receive over the network a second message that includes a second set of received lower level but not higher level features in response to the request message that stipulates the at least one additional feature; and
- a fourth set of computer instructions to uniquely identify one feature set from among the matching sets using the second set of received features through any needed extraction of higher level features wherein an iterative loop is performed in which a Kth higher level feature is extracted using the first and second sets of received lower level features, a matching feature set is searched using the Kth higher level feature, and the addresses of the feature sets that match the Kth higher level feature are stored as the matching feature set until a unique match is determined, where K is natural number from 1 to a maximum number of higher level features.

38. The computer readable storage medium of claim 37 wherein each feature set is associated with a media file title, the computer program further comprising a fifth set of computer instructions to transmit, over the network to a sender of the message, a reply message that includes the media file title.

39. (Canceled)

40. The computer readable storage medium of claim 38 wherein the fourth set of computer instructions further is to determine a link address for a media file uniquely associated with the uniquely identified feature set, and wherein the fifth set of computer instructions is further to transmit the link address in the reply message.

41-46. (Canceled)

47. The computer readable storage medium of claim 37 wherein the request message includes at least one of a number of additional features and a type of the at least one additional feature.

48. An apparatus comprising:

means for receiving a media sample;

processing means for extracting at least one feature from a digital version of the media sample, said processing means responsive to a user input to extract a first set of lower level but not higher level features and responsive to a request message identifying at least one additional feature to extract a second set of lower level but not higher level features consistent with the identified at least one additional feature;

means for transmitting the first and second sets of lower level but not higher level features in separate messages over a wireless communication link to a remote service for any necessary higher level feature extraction for matching in conjunction with the first and second sets of lower level features; and

means for receiving the request message through wireless communications and for receiving notification of an identification of a media corresponding to the media sample from the remote service.

49. The apparatus of claim 48, wherein the means for receiving a media sample comprises a transducer, and the means for extracting comprises a digital processor.

50. A method comprising:

at a portable wireless device, receiving a media sample;

at the portable wireless device, extracting a first plurality of lower level but not higher level features from a digital version of the media sample;

transmitting from the portable wireless to a remote service device a message that includes the extracted first plurality of lower level but not higher level features;

receiving at the portable wireless device a request message requesting at least one additional lower level but not higher level feature;

at the portable wireless device, extracting at least one extra lower level but not higher level feature consistent with the request message;

transmitting from the portable wireless device a message that includes the extracted extra lower level but not higher level feature to the remote service for any necessary higher level feature extraction for matching in conjunction with the first and second sets of lower level features; and

receiving a notification of identification from the remote service.

51. The apparatus as in claim 1, further comprising a button configured, when pressed, to initiate identification of media from the media sample.

52. The computer readable medium of claim 23, further comprising initiating identification of media from the media sample through activating a button for identification of media.

53. The apparatus of claim 48, further comprising a button configured, when pressed, to initiate identification of media from the media sample.

54. The method of claim 50, further comprising initiating identification of media from the media sample through activating a button for identification of media.

55. The method of claim 54, further comprising providing a link, after the remote service identifies the media, that, when activated, accesses a music service for downloading the media.

56. An apparatus comprising:

a receiver configured to receive over a network from a device a first message that includes a first set of lower level but not higher level features extracted from a media sample;

a transmitter configured to request over the network from the device at least one additional feature in a request message, wherein the receiver is configured to receive over the network from the device a second message responsive to the request message, the second message including a second set of lower level but not higher level features extracted from the media sample; and

a processor configured to use the received lower level but not higher level features to identify a media corresponding to the media sample and, if needed, configured to extract higher level features from the received lower level but not higher level features to identify the media corresponding to the media sample, wherein an iterative loop is performed in which a Kth higher level feature is extracted using the first and second sets of received lower level features, a matching feature set is searched using the Kth higher level feature, and the addresses of the feature sets that match the Kth higher level feature are stored in the matching feature set until a unique match is determined, where K is natural number from 1 to a maximum number of higher level features, wherein the transmitter is configured to transmit a notification of identification of the media sample to the device.

57. A method comprising:

receiving at a remote service from a device through a network a first message that includes a first set of received extracted lower level but not higher level features from a media sample;

searching a database of feature sets for all matching sets that match the first set of received extracted lower level but not higher level features and determining at least one additional feature that distinguishes among each of the matching sets;

transmitting over the network a request message that stipulates the at least one additional feature;

receiving over the network a second message that includes a second set of received extracted lower level but not higher level features in response to the request message that stipulates the at least one additional feature; and

uniquely identifying one feature set from among matching sets using the received lower level features through any needed extraction of higher level features from the received extracted lower level but not higher level features if a unique match is not found from the received extracted lower level but not higher level features, wherein an iterative loop is performed in which a Kth higher level feature is extracted using the first and second sets of received lower level features, a matching feature set is searched using the Kth higher level feature, and the addresses of the feature sets that match the Kth higher level feature are stored until the unique match is determined, where K is natural number from 1 to a maximum number of higher level features.

58. The apparatus of claim 56, wherein the first and second messages comprise the at least one extracted lower level but not higher level feature and no portion of the digital version of the media sample.

59. The apparatus of claim 56, wherein the network comprises a wireless communications link established between the apparatus and the device, and the extracted first set of lower level but not higher level features are received over the wireless communications link.

60. The apparatus of claim 56, wherein the first and second sets of lower level but not higher level features comprise MPEG-7 descriptors.

61. The apparatus of claim 56, wherein the first set of lower level but not higher level features is non-reconstructive of a digital version of the media sample.

62. The apparatus of claim 56, wherein the first and second sets of lower level but not higher level features, in combination, are non-reconstructive of the digital version of the media sample.

63. The apparatus of claim 56, wherein the request message specifically identifies each additional feature at least by type, and the second set of lower level but not higher level features comprises only features of the said identified type.

64. The method of claim 57, wherein the first and second messages comprise the at least one extracted lower level but not higher level feature and no portion of the digital version of the media sample.

65. The method of claim 57, wherein the network comprises a wireless communications link established between the apparatus and the device, and the extracted first set of lower level but not higher level features are received over the wireless communications link.

66. The method of claim 57, wherein the first and second sets of lower level but not higher level features comprise MPEG-7 descriptors.

67. The method of claim 57, wherein the first set of lower level but not higher level features is non-reconstructive of a digital version of the media sample.

68. The method of claim 57, wherein the first and second sets of lower level but not higher level features, in combination, are non-reconstructive of the digital version of the media sample, wherein the lower level but not higher level features comprise signal envelope and centroid, wherein the higher level features comprise a timbral temporal distance between timbral temporal centroids.

69. The method of claim 57, wherein the request message specifically identifies each additional feature at least by type, and the second set of lower level but not higher level features comprise only features of the said identified type.

70. A system comprising:

a mobile station; and

a remote service, wherein

the mobile station comprises

an interface configured to receive a media sample;

a first processor configured to extract a first set of lower level but not higher level features from a digital version of the media sample;

a first transmitter configured to transmit the extracted first set of lower level but not higher level features over a wireless communication link to the remote service,

a first receiver configured to receive over the wireless communication link a request message that requests at least one additional feature;

wherein the first processor is further configured to respond to the request message to extract a second set of lower level but not higher level features from the digital version of the media sample and to transmit the extracted second set of lower level but not higher level features over the wireless communication link to the remote service for any necessary higher level feature extraction for matching, wherein the first receiver is configured to receive notification as to identification of a media corresponding to the media sample from the remote service, wherein the remote service comprises

a second receiver configured to receive over a network from the mobile station a first message that includes a first set of lower level but not higher level features extracted from the media sample;

a second transmitter configured to request over the network from the mobile station at least one additional feature in a request message, wherein the second receiver is configured to receive over the network from the mobile station a second message responsive to the request message, the second message including a second set of lower level but not higher level features extracted from the media sample; and

a second processor configured to use the received lower level but not higher level features to identify a media corresponding to the media sample and, if needed, configured to extract higher level features from the received lower level but not higher level features to identify the media corresponding to the media sample, wherein an iterative loop is performed in which a Kth higher level feature is extracted using the first and second sets of received lower level features, a matching feature set is searched using the Kth higher level feature, and the addresses of the feature sets that match the Kth higher level feature are stored in the matching feature set until a unique match is determined, where K is natural number from 1 to a maximum number of higher level features, wherein the second transmitter is configured to transmit a notification of identification of the media sample to the mobile station.

X. EVIDENCE APPENDIX

Appellants are unaware of any evidence that is required to be submitted in the present Evidence Appendix.

XI. RELATED PROCEEDINGS APPENDIX

Appellants are unaware of any related proceedings that are required to be submitted in the present Related Proceedings Appendix.